REMARKS

The Applicant would like to thank the Examiner and Supervisory Patent Examiner Dana Ross for their courtesy in the telephone interview conducted with the Applicant's attorney, Kevin McDermott, on September 3, 2009. The Applicant's attorney requested the interview in order to discuss the Advisory Action mailed on August 21, 2009. During the interview, Applicant's attorney questioned the finding that the Hardwick reference anticipated the claims and that security device 20 shown in FIG. 1 of Hardwick was also present in FIG. 6 of Hardwick. The Applicant's attorney stated that claim 16 of the application required a first layer with a moiré pattern and at least two secondary layers each having a moiré analyzer and that there was no such teaching in Hardwick. The Examiner disagreed and no agreements were reached.

Supervisory Examiner Ross asked the Applicant's attorney to submit a summary of the Applicant's arguments in writing so that they could be reviewed more thoroughly. The summary of the Applicant's arguments is contained at the end of this paper.

Claims 1-30 are pending in the application. The Applicant has cancelled claims 1-15 and amended independent claim 16 to correct the spelling of the word "moiré." No other amendments to the claims have been made and no new matter has been made to claims 16-30.

Applicant's Invention

Claim 16 is directed to an object of value comprising: a carrier layer, at least one optical security element which is disposed on the carrier layer and which has a first layer containing a moiré pattern, and two or more secondary layers which each contain a respective moiré analyzer

for the moiré pattern of the first layer. A first secondary layer is arranged on the same side of the carrier layer as the first layer and a second secondary layer is arranged on the opposite side of the carrier layer so that a first moiré image is visible when viewed in transmitted light and a second moiré image is visible when viewed in incident light. A pattern formed by repeating structures acts as the moiré analyzer.

The embodiment of the present invention set forth claim 16 is described in the specification at page 13, line 18 to page 14, line 9 as follows:

> A further embodiment by way of example of the invention will now be described with reference to FIGS. 5a to 5c.
>
> FIG. 5a [reproduced below] shows a banknote 15 which comprises the carrier 1, the layer 21, the layer 31 and a layer 33. The layers 21 and 31 are like the layers 21 and 31 shown in FIG. 1, that is to say the layer 21 contains a moire pattern and the layer 31 contains a moire analyser. The layer 33 is like the layer 22 shown in FIG. 2 and contains a moire pattern which acts as a moire analyser or as a moire pattern superimposed on the moire pattern 21. In the embodiment shown in FIG. 5a the carrier 1 is transparent or semitransparent at least in the region in which the layer 21 is applied.

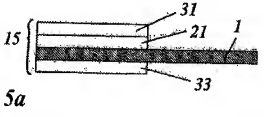

Fig. 5a

> When viewing the arrangement in incident light, the result is the effect shown in FIG. 5b [reproduced below]:

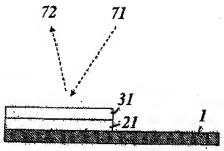

Fig. 5b

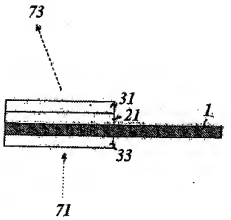

Fig. 5c

> Incident light 71 passes through the layers 31 and 21, is reflected and then determines the impression given to the viewer. Here there is the effect already described with reference to FIG. 1, that a moire image 72 becomes visible to the viewer, that image being determined by the superimposition of the moire pattern of the layer 21 and the moire analyser of the layer 31.
>
> The effect shown in FIG. 5c [reproduced above] is produced when viewing in transmitted light:
>
> The incident light 71 passes through the layers 31, 1, 21 and 31, so that the viewer sees a moire image 73 which is produced by the superimposition of the moire patterns of the layers 31 and 21 and the moire analyser 31.

Thus, claim 16 (as illustrated above in FIG. 5a) requires: a carrier layer 1, at least one optical security element 21, which has a first layer containing a moiré pattern, and two or more secondary layers 31, 33 each of which contain a respective moiré analyzer for the moiré pattern of the first layer.

Response to Rejections

Claims 1-15 of the present application have been cancelled. Claims 16-30 are now pending. After carefully considering the final Office Action mailed on April 21, 2009 and the

Advisory Action mailed on August 21, 2009, the Applicant responds to the issues raised therein as follows:

Claim Rejections – 35 USC § 102

Claims 1-6, 8, 10, 15-21, 23, 25 and 30 have been rejected under 35 U.S.C. 102(b) as anticipated by U.S. Patent Application Publication No. 2002/0027361 to Hardwick et al. ("Hardwick"), which discloses a security document (i.e., a banknote) with a security device applied to the substrate. Hardwick discloses that "a wide variety of security devices may be employed" (paragraph [0022]). However, Hardwick neither teaches nor suggests a security document with additional layers containing moiré patterns or analyzers that are applied to the substrate and Hardwick does not teach or suggest a security document with more than one security device.

At the bottom of page 4 and continuing to the top of page 5 of the Office Action, claim 16 has been found to be anticipated by Hardwick as follows:

> Regarding claim 16, Hardwick anticipates an object of value comprising: i) a **carrier layer** (see abstract; note that the security document is a bank note); ii) at least one optical security element (see paragraph 37, lines 1-2) which is disposed on the carrier layer (see paragraph 37, lines 2-5) and which has a **first layer containing a moiré pattern** (see paragraph 22, lines 1-6); and iii) **two or more secondary layers which each contain a respective moiré analyzer** for the moiré pattern of the first layer (see fig. 6), and a first secondary layer is arranged on the same side of the carrier layer as the first layer (see fig. 6) and a second secondary layer is arranged on the opposite side of the carrier layer (see fig. 6) so that a first moiré image is visible when viewed in transmitted light (see paragraph 23, lines 1-5), and a second moiré image is visible when viewed in incident light (see paragraph 57, lines 1-3), wherein a pattern formed by repeating structures acts as the moiré analyzer (see fig. 6).
>
> (Emphasis added.)

The Examiner has found that Hardwick teaches a structure that includes a substrate (10) that anticipates the carrier layer in claim 16, and at least three additional layers (i.e., the first layer and two or more secondary layers) that contain a moiré pattern and two or more moiré analyzers. However, the Examiner has failed to identify these "at least three additional layers" because they are not present in the security documents disclosed by Hardwick. If the carrier layer in claim 16 is anticipated by the substrate 10 in Hardwick as the Examiner has found, what structures in Hardwick anticipate the three other layers in claim 16 that contain a moiré pattern and two or more moiré analyzers?

Hardwick teaches only one structure that is capable of containing a moiré structure -- the substrate (10). There is no teaching or suggestion of any additional layers applied to the surface of the substrate (10), which would be suitable for forming a security device. The only "other layers" taught by Hardwick (layers 13, 14, 15 and 16) are ink layers, which are not suitable for supporting moiré structures. Paragraph [0018] of Hardwick clearly states that the security devices are contained either in the substrate 10 or on one or more of the surfaces of the substrate 10:

> The security device may be formed within the transparent plastics substrate. Alternatively, the security device may be applied to at least one of the first and second surfaces of the substrate. (Emphasis added.)

Moreover, Hardwick teaches moiré patterns that are applied to the surface of the substrate (10). See paragraph [0023]. There is no teaching or suggestion in Hardwick that moiré patterns can be formed within the substrate. Also, there is no teaching or suggestion in Hardwick

of "additional layers" containing moiré patterns or analyzers that are applied to the substrate as required by claim 16.

The Examiner states at the bottom of page 4 of the Office Action that Hardwick teaches "**a first layer containing a moiré pattern** (see paragraph 22, lines 1-6)." Hardwick states in paragraph [0022], lines 5-6 that examples of the security device that may be used are "front and rear registration devices, including Moire patterns." Hardwick further discloses in paragraph [0023] that:

> When the security device comprises a front to back registration device, such as a Moire pattern, **different parts of the device may be applied to the first and second surfaces on both sides of the clear plastics substrate** before the opacifying layers of ink are applied.
>
> (Emphasis added.)

In accordance with the teachings of Hardwick, if the first layer contains a security device that is a moiré pattern as the Examiner has found, then "different parts of the device may be applied to the first and second surfaces on both sides of the clear plastics substrate." However, there is no teaching or suggestion in Hardwick of a first layer applied to the substrate with "different parts" of a moiré pattern "applied to the first and second surfaces" as the Examiner has found.

In rejecting claim 16, the Examiner has combined features of two different embodiments taught by Hardwick. In the first embodiment, Hardwick discloses a substrate 10 formed from a "clear plastic material" with a security device 20 on the lower surface 11 covered by two layers

of opacifying ink 13, 14. See FIG. 1 of Hardwick, which is reproduced below. The surface 12 of the substrate 10 opposite the security device 20 also has two layers 15, 16 of opacifying ink

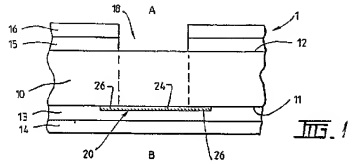

FIG. 1

with a half-window 18 through the two layers 15, 16 for viewing the security device 20. See paragraph [0033] and FIG. 1. The Examiner has cited paragraph 37 of Hardwick and found that security device 20 anticipates the "at least one optical security element" in "element i)" of Applicant's claim 16. However, if security device (20) was a moiré pattern, it would have two parts disposed on the opposing surfaces of the substrate (20) – see paragraph [0023] – and would look like FIG. 6 (reproduced below).

The Examiner then goes on to find "element ii)" and "element iii)" of Applicant's claim 16 are disclosed in a second embodiment taught by Hardwick, which is illustrated in FIG. 6 of Hardwick (below). This is a front-to back registration device, such as a moiré

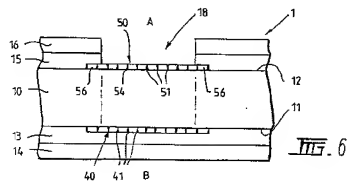

FIG. 6

pattern (paragraphs [0052] and [0053]), and Hardwick teaches that these devices are formed on the opposing surfaces of the substrate [0023] — not within the substrate (10).

One skilled in the art would not combine the security device 20 in FIG. 1 with the security device formed by the moiré patterns 40, 50 in FIG. 6 of Hardwick as the Examiner has suggested. The Examiner has found that the security device 20 in FIG. 1 can be a moiré pattern. This is correct. However, Hardwick teaches that, when the security device (20) in FIG. 1 is a moiré pattern, it is another embodiment of his invention (paragraph [0052]), which is illustrated in FIG. 6. If another moiré pattern were applied to the surfaces of the moiré patterns 40, 50 in FIG. 6, as the Examiner has suggested, it would either destroy or interfere with the moiré patterns 40, 50 already there. Moreover, Hardwick neither teaches nor suggests adding additional layers to the surface of the substrate (10) for forming additional moiré patterns.

One of ordinary skill in the art would understand that Hardwick teaches away from interposing security device 20 between the two moiré patterns 40, 50. Hardwick teaches in paragraph [0053] that:

> The patterns 40 and 50 may comprise Moire patterns consisting of a series of lines 41, 51 having a predetermined spacing. When the security documents 1 is viewed in transmission from position A, and possibly also from position B, **the combination of the two sets of lines 41 and 51 can produc[e] a Moire pattern due to interference effects**. The security document of FIG. 6 is very difficult to counterfeit because **the nature of the Moire pattern produced by the security device 40, 50 depends upon the predetermined spacing between the lines 41 and 51 of the patterns 40 and 50 and also upon the width of the clear polymer substrate 10 separating the patterns 40 and 50.**
>
> (Emphasis added.)

Hardwick teaches that "the combination of the two sets of lines 41 and 51 can produc[e] a Moire pattern due to interference effects." Positioning security device 20 between the two moiré patterns 40, 50 would prevent them from functioning as Hardwick intended. Therefore, one skilled in the art would not combine the security device 20 of FIG. 1 with the moiré patterns 40, 50 of FIG. 6.

Moreover, Hardwick identifies FIG. 6 as "another embodiment of the present invention" (paragraph [0052], lines1-2) and states in paragraph [0052] that the embodiment in FIG. 6 is **different** from the embodiment in FIG. 1:

> Referring to FIG. 6, there is shown **another embodiment** of the present invention which is similar to the embodiments of FIGS. 1 and 4, and corresponding reference numerals have been applied to corresponding parts. **The embodiment of FIG. 6 differs from FIGS. 1 and 4** in that it includes a front-to-back registration device comprising a first pattern 40 applied on the first, lower surface 11 of the clear plastics substrate 10 and a second pattern 50 applied on the second, upper surface 12 of the substrate 10.
>
> (Emphasis added.)

Hardwick states that the embodiment in FIG. 6 is different from the embodiments in FIGs. 1 and 4 because FIG. 6 uses a different security device (i.e., a "front-to-back registration device"). The embodiment in FIG. 6 is formed when the security device (20) in FIGs. 1 and 4 is replaced by a "front-to-back registration device," such as a moiré pattern. Hardwick neither teaches nor suggests that the security device 20 of FIG. 1 can be combined with the "front-to-back registration device" embodiment shown in FIG. 6. Moreover, Hardwick clearly states that "corresponding reference numerals have been applied to corresponding parts" in FIGs. 1 and 6. However, reference number 20 for the security device in FIG. 1 is absent from FIG. 6. One

skilled in the art would understand that Hardwick does not teach or suggest the inclusion of "security device 20" in the embodiment shown in FIG. 6.

Contrary to the unambiguous teachings of Hardwick, the Examiner has found that FIG. 6 teaches an embodiment that includes "first pattern 40" and "second pattern 50" in addition to "security device 20" of FIG. 1. There is no teaching or suggestion in Hardwick that would lead one of ordinary skill in the art to combine "security device 20" of FIG. 1 with "first pattern 40" and "second pattern 50" of FIG. 6, nor does the Examiner provide any explanation of why one of ordinary skill in the art would combine the two embodiments to arrive at the object of value in claim 16.

For the reasons discussed above, claim 16 is not anticipated by Hardwick. Moreover, claims 17-21, 23, 25 and 30, which depend on claim 16, also are not anticipated by Hardwick for the same reasons. Accordingly, the Applicant respectfully requests that the Examiner withdraw the rejection of claims 16-21, 23, 25 and 30 as anticipated by Hardwick.

Claim Rejections – 35 USC § 103

Claims 7 and 22 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hardwick in view of U.S. Patent No. 4,892,336 to Kaule, et al. ("Kaule"), which discloses an anti-falsification document having a security thread. Section 6 on page 7 of the Office Action states that:

> Hardwick discloses the object of value according to claim 1, but fails to disclose the first layer comprising a partially shapes thin film layer system which produces a color change effect by means of interference" and that "Kaule teaches a first

layer comprising a partially shaped thin film layer system which produces a color change effect (see col. 5, lines 11-14).

Claim 7 has been cancelled. Claim 22 requires the color change to be produced by "interference," which is the addition (i.e., superposition) of two or more light waves that result in a new light wave pattern. The thin film layer system in claim 22 produces changes in color by varying the thicknesses and densities of the layers to alter the light waves passing through the layers. In contrast, Kalue discloses that: "If the stripes are, for example, individual stripes of color with different coloration, the security thread changes its color when the document is slightly tilted." (Col. 5, lines 11-14.) Thus, the color changes in Kalue result from the different colorations of the stripes and not by interference.

Moreover, claim 22 depends on independent claim 16. As discussed above, Hardwick does not teach or suggest the object of value in claim 16 and Kalue does not overcome this deficiency. Accordingly, claim 22 is not obvious in view of Hardwick and Kalue.

Claims 9 and 24 have been rejected under 35 U.S.C. 103(a) as unpatentable over Hardwick in view of U.S. Patent Application Publication No. 2003/0003323 to Murakami et al. ("Murakami"), which discloses particles emitting fluorescence after irradiation with infrared rays. Claim 9 has been cancelled. Murakami only teaches fluorescent particles and does not overcome the deficiencies in Hardwick that are discussed above. Accordingly, claim 24 is not obvious in view of Hardwick and Murakami.

Claims 11-13 and 26-28 have been rejected under 35 U.S.C. 103(a) as unpatentable over Hardwick in view of U.S. Patent No. 5,712,731 to Drinkwater et al. ("Drinkwater"), which discloses a security device that includes an array of microimages that are viewed through a corresponding array of microlenses generates a magnified image. Claims 11-13 have been cancelled. The Examiner has found in section 8 on page 9 of the Office Action that Hardwick "fails to disclose the second layer being part of a transfer layer of a transfer film which is applied to the first layer or the side of the carrier layer which is in opposite relationship to the first layer." The Examiner has cited Drinkwater as teaching these features. However, Drinkwater does not overcome the deficiencies in Hardwick that are discussed above. Accordingly, claims 26-28 are not obvious in view of Hardwick and Drinkwater.

Claims 14 and 29 have been rejected under 35 U.S.C. 103(a) as unpatentable over Hardwick in view of U.S. Patent Application Publication No. 2003/0137145 to Fell et al. ("Fell"), which discloses an article having a security device and a verification means, wherein the verification means is brought into register with the security device to authenticate the article. Claim 14 has been cancelled. The Examiner has found in section 9 on page 11 of the Office Action that Hardwick "fails to disclose a loose moiré analyzer." Fell has been cited as teaching "a loose moiré analyzer." However, Fell does not overcome the deficiencies in Hardwick that are discussed above. Accordingly, claim 29 is not obvious in view of Hardwick and Fell.

Applicant's Comments to Interview Summary

The Interview Summary mailed on September 8, 2009 stated in part that:

> Applicant's representative asserted that claim 16 as presently pending, calls for three moiré analyzers, whereas Examiner interprets the claim as calling for two moiré analyzers and one moiré pattern.

This statement is partly incorrect. The Applicant's position on the scope of the claims was stated in the "Proposed Agenda for Telephone Interview" submitted on August 28, 2009 in which the Applicant stated:

> The claims of the present application require "at least one optical security element which is disposed on the **carrier layer** and which has a first layer containing a moiré pattern, and **two or more secondary layers** which each contain a respective moiré analyzer for the moiré pattern of the first layer." Thus, the claims require **a minimum of three layers** that contain either a moiré pattern or a moiré analyzer.

Thus, the Applicant does not contend that claim 16 "calls for three moiré analyzers" as the Interview Summary states. Both the Applicant and the Examiner agree that the claims require at least a first layer containing a moiré pattern and at least two secondary layers each containing a moiré analyzer. Accordingly, there is no disagreement between the Examiner's interpretation of the claims and the Applicant's interpretation.

Response to the Advisory Action and a Summary of Applicants' Arguments

The Applicant summarizes his arguments as requested by Supervisory Examiner Ross in the September 3, 2009 telephone interview with his attorney as follows:

Claim 16 requires "a **carrier layer**, at least one optical security element which is disposed on the carrier layer and which has a **first layer** containing a moiré pattern, and **two or**

more secondary layers [arranged on opposing sides of the carrier layer] which each contain a respective moiré analyzer for the moiré pattern of the first layer." Thus, in addition to the carrier layer which the Examiner has found to be anticipated by the substrate (10) in Hardwick, claim 16 requires at least three additional layers that are arranged on the carrier layer. The specification discloses at page 13, lines 20-23 that:

> FIG. 5a shows a banknote 15 which comprises the carrier 1, the layer 21, the layer 31 and a layer 33. The layers 21 and 31 are like the layers 21 and 31 shown in FIG. 1, that is to say the layer 21 contains a moire pattern and the layer 31 contains a moire analyser.

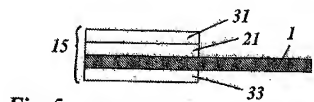

Fig. 5a

Thus, claim 16 requires a structure with four layers; a carrier layer (1) and a minimum of three layers (21, 31, 33) arranged on the carrier layer that contain either a moiré pattern or a moiré analyzer.

The Examiner found in the paragraph beginning at the bottom of page 4 of the final Office Action that the carrier layer in claim 16 is anticipated by the substrate (10) in Hardwick. Hardwick teaches a security device that can be located on one or both surfaces of the substrate (10) or in the substrate (10). Paragraph [0018]. When the security device is a front to back registration device, such as a moiré pattern, "parts of the device may be applied to the first and second surfaces on both sides of the clear plastics substrate." Paragraph [0023]. The other layers taught by Hardwick (layers 13, 14, 15 and 16) are ink layers that are not capable of containing moiré structures.

Hardwick teaches that the security document includes a security device. Paragraph [0022] of Hardwick lists examples of the different security devices that can be used. These different security devices include devices that are applied to only one surface of the substrate (10) and other devices that are applied to both surfaces of the substrate (10). FIG. 1 illustrates one embodiment, wherein the security device (20) is applied to one surface of the substrate (10). FIG. 6 illustrates another embodiment, wherein the security device (40, 50) is a front and rear registration device (such as moiré patterns), which is applied to the surfaces on both sides of the substrate (10). The embodiment in FIG. 6 is formed when a front to rear registration device is substituted for the security device (20) in FIG. 1.

The Examiner has found that Hardwick anticipates Applicant's claim 16 when the security device (20) in FIG. 1 of Hardwick is a moiré pattern and it is combined with the moiré analyzers of FIG. 6. However, as discussed in the preceding paragraph, FIGs. 1 and 6 are different embodiments. FIG. 1 illustrates an embodiment with a security device (20) that is not a front to rear registration device (i.e., a moiré pattern) and FIG. 6 illustrates an embodiment with a security device (40, 50) that is a front to rear registration device. Thus, the combination suggested by the Examiner would combine two front to rear registration devices (FIG. 6) on the same substrate (10). What such a combination would look like is neither taught nor suggested by

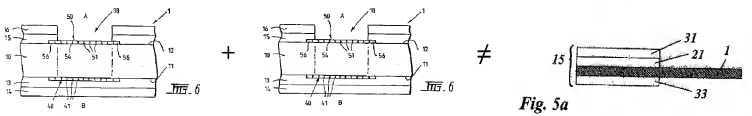

Fig. 5a

Hardwick. However, one of ordinary skill in the art would not find that such a combination (illustrated above) would yield the object of value in Applicant's claim 16. If the carrier layer (1) in claim 16 is anticipated by the substrate (10) in FIG. 6 as the Examiner has found, then the two sets of moiré patterns (FIG. 6 + FIG. 6) would have to be formed on the opposing surfaces of the same substrate (10). In addition, the combination does not teach or suggest the three layers (21, 31, 33) in Fig. 5a that arranged on the carrier layer (1).

Claim 16 requires three layers (21, 31, 33) that contain either a more pattern or a moiré analyzer to be arranged on the carrier layer (1). Hardwick only discloses layers with moiré pattern on the opposing surfaces of the substrate (10) and does not disclose layers with moiré analyzers or patterns arranged on the substrate (10). Therefore, the combination of two moiré patterns (FIG. 6 + FIG. 6 of Hardwick) suggested by the Examiner does not anticipate claim 16.

Conclusion

The Applicant submits that the arguments made herein clearly distinguish claims 16-30 from the cited prior art references. Moreover, the cited prior art references (either alone or in combination) do not teach or suggest the use of a moiré pattern in combination with two moiré analyzers to generate two different moiré image as required by claims 16-30. Accordingly, the Applicant respectfully requests that the rejections of the claims be withdrawn and the claims be allowed.

If the Examiner has any questions relating to this Amendment, the Examiner is respectfully invited to contact Applicant's attorney at the telephone number provided below.

Respectfully submitted,

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